A. CLASSIFICATION OF SUBJECT MATTER IPC 7 F15B11/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\begin{array}{ll} \mbox{Minimum documentation searched} \ \ \mbox{(classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{F15B} \end{array}$

Documentation searched other than minimum documentation to the extent that such documents are included. In the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

P,A EP 1 231 386 A (HITACHI CONSTRUCTION MACHINERY) 14 August 2002 (2002-08-14) paragraphs '0039!, '0040! DE 197 15 021 A (REXROTH MANNESMANN GMBH) 15 October 1998 (1998-10-15) cited in the application figure 1	•
15 October 1998 (1998-10-15) cited in the application	1
	1

			
Special categories of cited documents: A* document defining the general state of the art which is not considered to be of particular relevance.	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention		
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Date of the actual completion of the international search	Date of mailing of the International search report		
19 August 2003	01/09/2003		
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European Patent Office, P.B. 5818 Patentiaan 2 NL – 2280 HV Pijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Toffolo, O		

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INTERNAT AL SEARCH REPORT

Information on patent family members

Internatio	ipphan No
PCT/EP	03/03537

Patent document dited in search report		Publication date		Patent family member(s)	Publication date
EP 1231386	A	14-08-2002	JP EP WO US	2001323902 A 1231386 A1 0188383 A1 2003097836 A1	22-11-2001 14-08-2002 22-11-2001 29-05-2003
DE 19715021	A	15-10-1998	DE	· 19715021 A1	15-10-1998